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Europe as a Convergence Engine

Heterogeneity and Investment Opportunities in Emerging Europe

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Abstract

This paper provides empirical evidence that countries in emerging Europe reaped the benefits of international financial integration over the past 12 years by attracting sizeable foreign capital inflows and accelerating medium-term growth. But the aggregate pattern masks substantial heterogeneity across countries; namely, new European Union member states and the European Union candidate countries are different from the European Union neighborhood. The growth benefits are supported from both a flow and a stock perspective in terms of the link between foreign savings and growth. While foreign savings might in part substitute for national savings, the analysis finds that the channel to high growth in these countries is, primarily, through making possible the pursuit of investment opportunities that would otherwise remain unfunded; in turn, this seems to be intimately linked to the opportunities created by European Union membership. Although this conclusion does not disappear if the outlier observations of the credit boom period that preceded the financial crisis are dropped from the sample, it does suggest that these excesses did not play as positive a role for growth.

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Europe as a Convergence Engine—Heterogeneity and Investment Opportunities in Emerging Europe

by

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JEL: F36, F41, F43, O47

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Europe as a Convergence Engine—Heterogeneity and Investment Opportunities in Emerging Europe[*]

1. Introduction

At a time when the European Union as a project is being questioned, it is worth asking if there have been positive aspects to this ambitious undertaking. To this end, we focus on the specific case of transition economies in emerging Europe that underwent financial liberalization beginning in the late 1990s. The opening of their financial markets accompanied by high investment demand and increased consumption resulted in sizeable and unprecedented net international capital inflows. And yet, there has been surprisingly little empirical attention given to the growth benefits of this external financing in the region. Only a few studies have focused on analyzing the role of foreign capital (Prasad et al. 2007; Abiad et al. 2009; and EBRD, 2009). These studies examine the links between foreign capital and growth, underscoring that transition countries do not conform to the puzzling global stylized facts in which capital flows uphill from poor to rich countries. But the empirical evidence they put forward is based on the assumed homogeneity across large country groups; 23 EU member states in the case of Abiad et al. (2009) and 21 transition countries in Prasad et al. (2007). In addition, this literature is, for the most part, silent as to the channels through which foreign savings might support growth in transition countries.

Perhaps the work by Abiad et al. is closest to our paper, but we extend their analysis by highlighting, as suggested above, that not all new EU member or EU aspiring countries are the same. More precisely, we argue that the aggregate patterns identified in the literature mask substantial heterogeneity in the financial integration experience within emerging Europe itself. The growth regressions in a dynamic panel data framework yield consistent evidence not only that emerging Europe's experience is different, but also that there are important differences among these countries. Specifically, foreign capital does spur, though to varying degrees, economic growth in the new EU member states (EU10) and the EU candidate and potential candidate countries, but this does not appear to be the case for the EU neighborhood countries.[1] While foreign savings at times might substitute for national savings, we find that the channel to high growth in emerging Europe is through making possible the pursuit of investment opportunities that would otherwise remain unfunded. In this regard, our results are different from those highlighted by Prasad et al. for developing countries in general. Moreover, our conclusions follow from both a flow and a stock perspective. We also explore the channels through which the

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[1] According to the terminology of the European Commission, the EU candidate countries are Croatia, FYR Macedonia, Montenegro and Turkey. We also include in this category the potential EU candidates (Albania, Bosnia and Herzegovina, Kosovo, and Serbia). We do not include Iceland.

nexus between finance and growth materializes. In turn, this seems to be linked not to financial depth, but to the role of EU membership (actual or prospective) in reducing financial frictions.

The nexus between external finance and growth is examined from a medium-term perspective, captured by the average growth of real GDP per capita (in purchasing power terms) in four-year non-overlapping intervals between 1973 and 2008. The use of four-year intervals allows us to more confidently exclude short-run (cyclical) components from the list of potentially relevant factors that might impact growth, such as the inflation rate and real exchange rate developments. Also, using four-year intervals allows us to exploit more efficiently the within-country variation in the data for European transition economies.[2] In particular, due to the transformational recessions of transition countries, the relevant sample for them covers only the period from 1997 onwards. But the results in this paper hold even if this shorter period is applied to all countries in the sample or only to developing countries in the sample.

A note of caution is also necessary. The exposure to external finance might in some cases have gone too far and might have come at the expense of increased economic fragility as evidenced by the harmful consequences of the sudden lack of foreign capital in some capital-importing European countries (e.g., the Baltic States). This vulnerability merits investigation and, in this paper, an acknowledgement of the risks of excessive external finance. As shown in a simple graph on absolute convergence (Figure 1, left chart), the evidence seems to suggest that Europe is indeed different. But exceptionally high growth rates were also present among the European transition economies (Figure 1, right chart). Thus, as suggested earlier, we also explore the role of excessive external imbalances in the growth experience of emerging European countries. Interestingly, we find that the results hold even more strongly after excluding from the sample what we could refer to as the credit boom observations of the pre-crisis period. Admittedly, this is a somewhat mechanic approach. Nonetheless, it suggests that, going forward, the goal should be to replicate the experience of some emerging European countries (e.g., Poland and Slovak Republic) while limiting the build-up of external vulnerabilities experienced by others (e.g., Latvia).

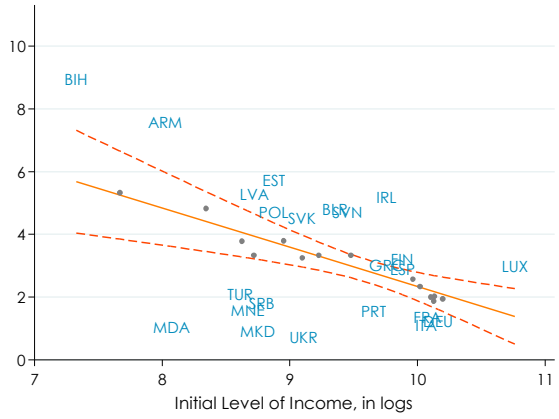
The paper is organized as follows. The next section presents evidence on the increased exposure of the emerging European economies to financial globalization over the past two decades, whereas the third section elaborates on the analytical framework of the growth equation we estimate and on the selection of the appropriate estimation procedure. The empirical results from both the flow and stock perspective of external imbalances are presented in the next section. The fifth section examines the channels between foreign savings and growth as well as the factors that might make much of emerging Europe different to the experience of other developing countries (or even to the experience of the EU neighbourhood countries); namely, the role of financial depth and financial frictions. It also includes a brief description of robustness tests conducted to support the paper's conclusions, not least that the results hold even if one were to exclude the experience of those countries that recorded large and unsustainable macroeconomic imbalances in the period immediately preceding the global financial crisis. Of

[2] It is important to note that there is little guidance on the "appropriate" time span to smooth business cycle fluctuations and most papers in the growth literature have used five-year intervals (e.g., Islam, 1995; and Prasad et al. 2007). We choose 4-year periods to exclude the transformational recessions of transition countries.

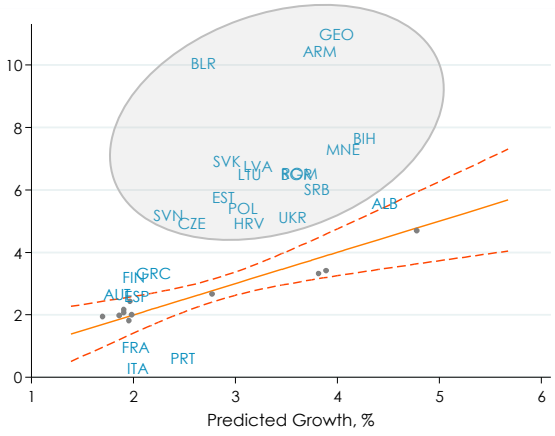
course this also implies that excess external imbalances have to be managed as their fruits are less supportive of growth.

Figure 1. Absolute Convergence and Excess Growth in Europe Prior to the Crisis

Convergence among European Countries (1997-2008)



Actual vs. Predicted Growth (2005-2008)



Source: Authors' calculations based on the World Bank and IMF data (2011). Note: Labels refer to countries placed outside the confidence bands. The dots are countries in between the bands.

2. Unprecedented Flows of Capital in Emerging Europe

From a pure financing perspective, the foreign capital inflow (i.e., the current account deficit) serves to augment the economy's scarce resources and to close the saving-investment mismatch. The reliance on external finance can be an outcome of domestic imbalances (e.g., low and stagnant saving rates) and of the behavior of non-residents (e.g., foreigners perceive a country's productive or financial assets as attractive). This implies that the net amount of foreign capital in the recipient economy is simultaneously determined along with the saving and investment decisions of domestic economic agents.[3] Yet, before we undertake an empirical exploration of simultaneity, some stylized facts serve to motivate our work.

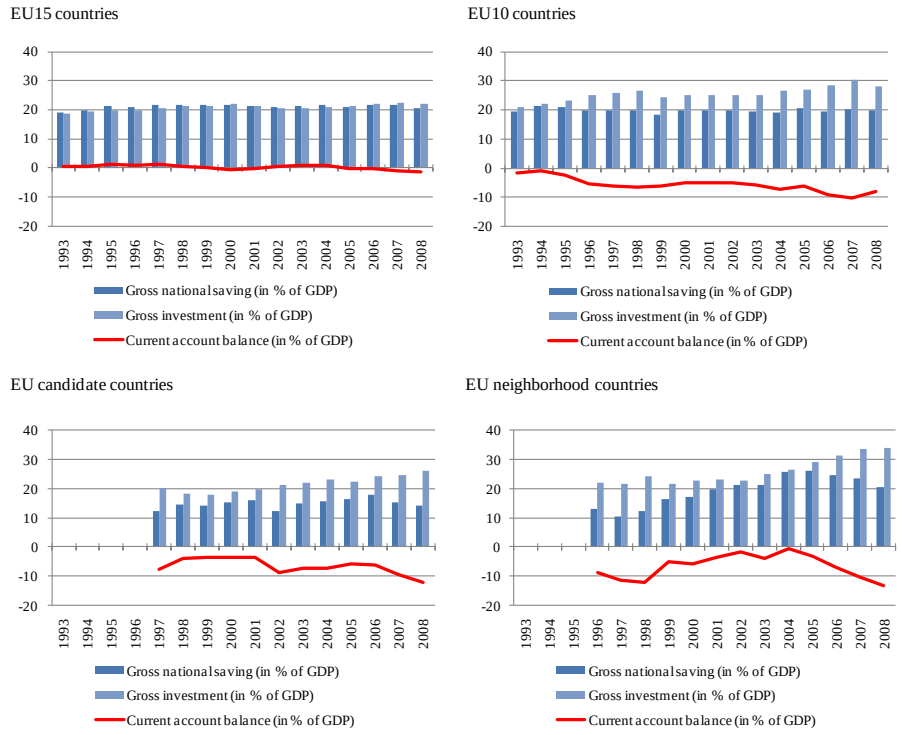
A descriptive analysis of the main trends during the transition period of the early and mid-1990s reveals that the net capital inflows were driven by the drop in the saving rates. In fact, the pre-transition saving rates were high by international standards, mainly because of the high involuntary savings in a central planning setting and limited consumer choice (Conway, 1995).[4] Average saving rates of 30 percent of GDP were common during the 1980s (Schrooten and

[3] While the interpretation of the current account deficit as a saving-investment imbalance seems straightforward, it is important to note that savings, investment and current account balance are simultaneously determined by the general equilibrium of income and prices as well as the economy's long-run solvency constraint. Not only foreign capital may crowd out domestic saving or augment the country's physical capital stock, but also it may respond to changes in the saving and investment behaviour of residents. Hence, it is driven by both the domestic imbalances and behavior of foreign residents and influenced by both the market participants and government policy response (e.g., current account targeting strategy).

[4] Throughout the report we also cover Turkey as one of the EU neighborhood countries, but of course its determinants of savings and investment are not linked to the same features of transition countries except in terms of closeness to the EU that is central to the conclusions of this paper.

Stephan, 2005). But given the collapse of output in the early stages of transition, emerging Europe witnessed a dramatic decline in saving rates. In part, this phenomenon may have also been an artifact of the rapid loss of confidence in the financial system and ensuing financial disintermediation. Since the reduction of investment activity did not mirror the decline in savings, these countries initially recorded high current account deficits. Gradually, however, the fruits of a successful implementation of macroeconomic stabilization programs took hold in many transition economies.

Figure 2. Saving-Investment Balances in Europe



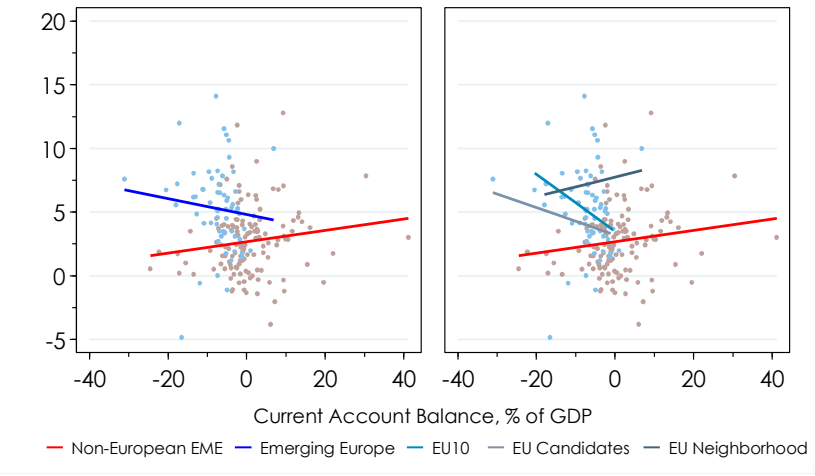
Source: Authors' calculations based on World Bank and IMF data (2011). Notes: Unweighted averages. The data is not presented if there is at least one missing country observation within a group.

The resumption of positive growth rates by the late 1990s was associated once again with a significant deterioration of current account positions and unprecedented inflows of private foreign savings. But was this the result of a substitution between national and foreign savings or the consequence of the existence of high investment opportunities? The evidence seems to suggest that in emerging Europe this second phase of increased dependence on foreign savings was not, for the most part, a case of savings substitution (Figure 2). On the contrary, it appears to have been targeted at exploiting attractive investment opportunities in a rapidly improving business environment. Indeed, investment in many cases adopted an upward trend and domestic savings either increased or remained stable. More precisely, classifying emerging Europe into the three political groups related to the European Union (EU10, EU candidate, and EU neighborhood countries) reveals quite a unique international financial integration experience. The EU10 and the EU candidates, on average, were by the late 1990s importing capital on a larger scale (Figure 2, second and third chart) compared to the varying reliance on external finance in the case of the EU neighborhood (Figure 2, fourth chart). Yet, the process does appear to have reached its limit in many countries during 2007-08. Indeed, it is then that investment appears to have adopted a

declining trend, in particular among the EU candidate and EU neighborhood countries, and in both of these groups a decline in national savings ensued.

The case of emerging Europe also appears to be consistent with what economic theory would predict: capital flows to high-growth countries (Figure 3; left chart). Hence, the allocation puzzle—that, paradoxically, capital flows to low-growth countries instead of high-growth countries—does not appear true in Europe either. These figures also suggest that the underlying strength of the link between foreign savings and growth might vary across groups. Still, an increase in current account deficits (i.e., capital inflows that happen to be absorbed) and an increase in growth are common among two of these country groups in emerging Europe (Figure 3; right chart). The opposite is the case, however, among emerging markets outside Europe—that is, high growth in incomes occurs jointly with an increase in current account surpluses (i.e., the allocation puzzle holds).

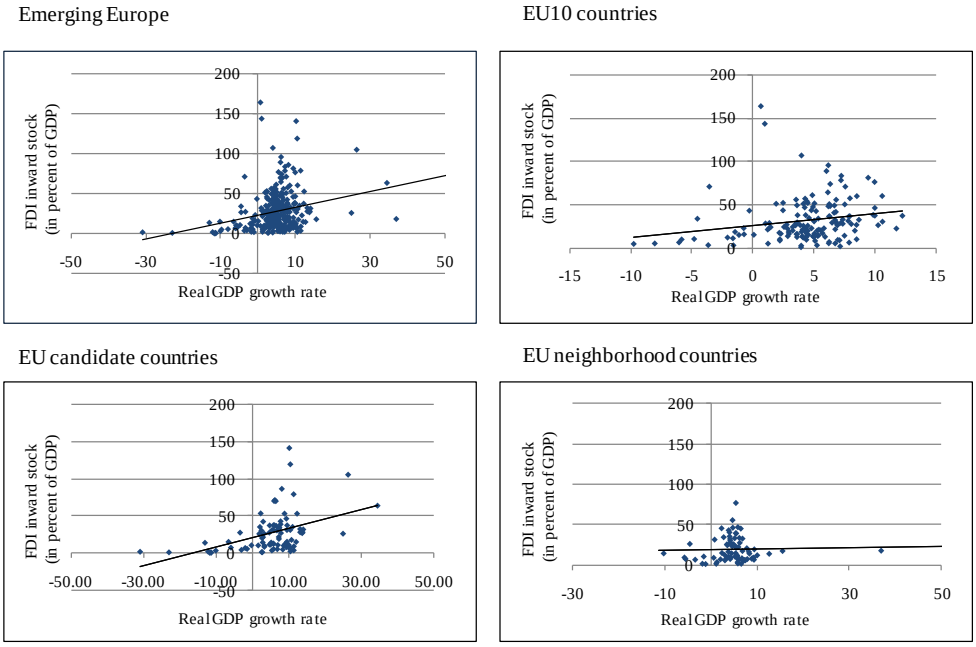
Figure 3. Current Account Balances (% GDP) and Growth in Emerging Economies



Source: Authors' calculations based on World Bank and IMF data (2011). Note: Period 1997-2008.

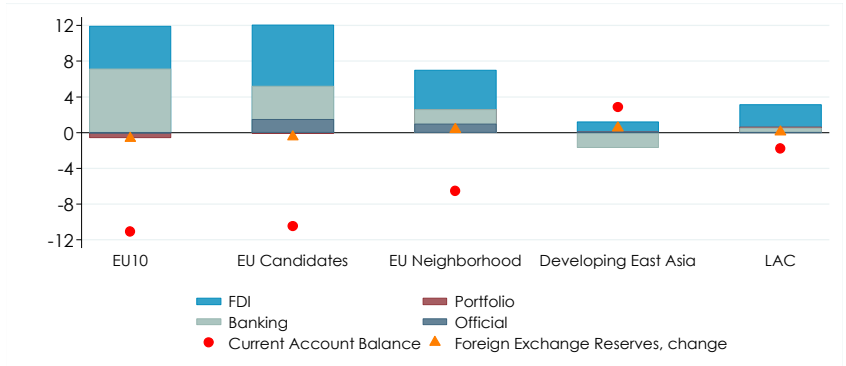
In terms of the composition, capital flows take the form of FDI, portfolio, and banking (or other) flows. Clearly, FDI in emerging Europe played a key role; it is particularly large across all three groups of emerging European countries and is positively correlated with growth (Figure 4). This is even more evident in the period immediately preceding the crisis. But the most distinctive feature is the large role played by banking flows, which comprise both wholesale funding and financial FDI. The latter relates to the relationship between parent banks and their subsidiaries. Indeed, no other region appears to experience such a degree of "ownership-driven" capital integration. Financial FDI may well combine the best aspects of alternative financing sources; namely, the risk-sharing features of FDI proper and the lower costs (relative to FDI proper) of debt-financing. But here too there are differences within emerging Europe. For example, Estonia relied almost fully on funding from Nordic banks, but in Latvia this was the case only among the subsidiaries of these banks. In turn, however, these banks account for a much smaller share of the assets of the banking system in the period immediately preceding Latvia's crisis; 60 percent in Latvia compared to 90 percent in Estonia. It is worth noting that Nordic banks have maintained their exposures in the region, but those domestic banks that relied on wholesale funding sources and non-resident deposits were particularly vulnerable. Parex Banka suffices as an example for those familiar with Latvia's plight in late 2008.

Figure 4. FDI Inward Stock (% GDP) and Real GDP Growth



Source: Authors' calculations based on World Bank and IMF data (2011). Note: Period 1997-2008.

Figure 5. Composition of Capital Flows in Emerging Regions (median values within groups)



Source: Authors' calculations based on World Bank and IMF data (2011). Note: Period 1997-2008.

3. Estimation Methodology

Against the background discussed above, the analytical framework of the growth model estimations in this paper builds on an influential paper by Sala-i-Martin et al. (2004) on the statistical significance of growth determinants. Their methodology is based on a Bayesian averaging of existing estimates and aims at narrowing the gap between the growth theories and the extensive empirical work of the past two decades. They examine the relationship between growth and a list of 67 explanatory variables (identified in the cross-country growth regressions from papers in refereed journals) using data for 88 countries during the period 1960-96. The selection of the variables is based on several criteria, such as: (i) sufficient time length availability of the published or computed variables (from 1960 onwards) and (ii) maximization of the number of countries with observations. The strength of the association between each

variable and growth is ranked according to the *ex post* inclusion probability. From the narrow list of 18 variables that are found to be significantly partially correlated with economic growth in the Sala-i-Martin et al. paper, five are selected as core explanatory variables in our econometric estimations. As examined below, the inclusion of these determinants (initial GDP per capita, educational attainment, population growth, relative price of investment goods, and trade openness) has been strongly advocated by growth theories. The list of determinants of economic growth used is by no means exhaustive and the criticism by Brock and Durlauff (2001) on the arbitrariness and "open-endedness" of growth specifications remains. While the lack of a fully fledged growth theory can only partly justify possible omitted variables, it is important to provide a theoretical justification for those that are selected. To this end, the relationship between the determinants used in this paper and the rates of medium-term economic growth is as follows.

The initial level of GDP per capita tests (*GDPPC*) the proposition of the absolute (unconditional) beta (β) convergence hypothesis. According to neoclassical growth theory (e.g., Solow, 1956), when structural differences between countries are accounted for, the low-income countries tend to display higher rates of growth than the developed economies. The validity of the hypothesis is tested by examining the influence of initial period real GDP per capita on the average growth rate of the real GDP per capita in purchasing power parity terms (PPP) during the following four-year period. The relevant empirical literature produces consistent evidence in favour of this relationship. Given the theoretical guidance and the robust empirical findings, the expected sign of the coefficient on this variable is negative.

The educational attainment of the adult population (*edu* or the average years of schooling) is a far-from-perfect proxy for a country's human capital but, given the lack of alternative education indicators, this measure plays a satisfactory role in growth regressions. The indicator does not capture the changes either in the quality of education or in the education system capacity to meet the skill composition of labor demand. We use the Barro and Lee (2010) educational attainment international dataset and refer to population above 25 years of age. An additional limitation of the measure of average years of schooling is that it "assumes unrealistically that a year of education adds a constant quantity of human capital, whether undertaken by a primary pupil or a college student" (Barro and Lee, 2001, pp. 558). Nevertheless, the expected sign is positive since human capital formation is expected to exhibit growth-conducive effects.

The relationship between population growth (*popgr*) and growth continues to raise controversies among development economists. "Population pessimists" argue that population growth inhibits development since greater population requires additional production capital per worker and involves public costs for raising children (e.g., Johnson and Lee, 1987). The mainstream neoclassical growth models predict that population growth has the same effect as depreciation: the increased supply of labor reduces the capital stock per unit of labor. According to this class of models, the steady state level of output will, all other things equal, increase if the rate of population growth decelerates. On the other hand, the camp of "population optimists" conjectures that population growth in the long run brings "improvement of productivity through both the contribution of new ideas and also the learning-by-doing consequent upon increased production volume" (Simon, 1987, p. 168). In particular, the endogenous growth literature (e.g., Lucas, 1990; and Romer, 1990 and 1994) emphasizes that the non-rivalry of new ideas accompanied by population growth are strong engines of economic growth. The proponents of

endogenous growth theories also argue that every generation underestimates the potential for the generation of new ideas and techniques (e.g., Jones, 2005). Since the growth theorists are divided over the multi-faceted role of demography for economic growth, the expected sign of the coefficient of this variable is ambiguous.

The relative prices of investment goods (*relpi*) are an important component of the user cost of capital and a proxy for the level of distortions in the economy. Since they are strongly negatively correlated with investment rates, which in turn influence the economy's growth capacity, their increase is likely to inhibit growth. This measure is constructed as a ratio between the price level of investment and the GDP deflator. The empirical studies offer compelling evidence in favour of a strong and negative relationship between the relative price of capital goods and investment and growth (e.g., Jones, 1994; and Collins and Williamson, 2001). In line with this literature, the expected sign on this relative price is negative.

The high exposure to globalization, *inter alia*, as seen by the degree of trade openness (*to*), is an important indicator of a country's ability to achieve greater specialization and cope with the external competitive pressures. Trade openness, commonly defined as the sum of country's exports and imports over GDP, is associated with the benefits from technology spillovers, particularly from the knowledge embedded in the imported capital goods. Theoretical models predicting a positive association (Grossman and Helpman, 1991; Rivera-Batiz and Romer, 1991; and Devereux and Lapham, 1994) have received empirical support by Edwards (1998), Wacziarg (2001), Greenaway et al. (2002), Parikh (2006), Foster (2008) and Wacziarg and Welch (2008). However, the literature is not uniform. Some studies suggest a negative relationship (e.g., Redding, 2002), which has been empirically documented by Rodriguez and Rodrik (2000), Vamvakidis (2002), Yanikkaya (2003), Clemens and Williamson (2004) and Kneller et al. (2008). Thus, the expected sign on the relationship between trade openness and growth is ambiguous.

As to the estimation technique, we implement dynamic panel estimations because this allows us to capture the dynamics in the growth process. It has the added advantage of allowing us to include financial integration measures among the explanatory variables even though these are endogenous. As argued by Bond (2002), even when the coefficients on lagged dependent variable are not of direct interest, allowing for the dynamics in the underlying process may be crucial for recovering consistent estimates of the other parameters. In addition, the global imbalances *per se* could be an outcome, rather than the driving force, of growth; i.e., the country's ability to attract foreign capital could be a result of its rapid productivity growth and strong catching up potential. Therefore, there is a strong rationale to control for endogeneity.

The selection between the dynamic (difference versus system general method of moments (GMM)) estimators is driven by the features of the dataset. With a short time dimension and persistent time series, the system GMM is found to bring efficiency gains in comparison with first difference GMM (Baltagi, 2005). The system GMM uses more moment conditions because the explanatory variables in first differences are instrumented with lags of their own levels and the explanatory variables in levels are instrumented with lags of their own first differences. The preferred estimation technique is the two-step system GMM estimator with Windmeijer (2005) finite sample correction for the asymptotic variance. An important caveat of the GMM panel data models is that they generate a large number of moments and, subsequently,

potential internal instruments. The use of too many instruments produces more statistically significant results, but increases the risk of "over fitting" the model. This trade-off is addressed by restricting the number of instruments as proposed by Roodman (2006); i.e., one instrument is created for each variable and lag distance rather than for each time period, variable, and lag distance. Lastly, the time series depth does not provide a sensible number of observations for conducting panel unit root tests (Baltagi, 2005). Nevertheless, the system GMM estimation performs well even in the presence of near random walk processes (Stata Press, 2007).

In line with the elaborated analytical framework, the baseline growth equation takes the following dynamic specification:

$$gr_{i,t} = \alpha_1 + \alpha_2\, gr_{i,t-1} + \beta_1 \ln\left(GDPPC_{i,t}\right) + \beta_2\, edu_{i,t} + \beta_3\, popgr_{i,t} + \beta_4\, relpi_{i,t} + \beta_5\, to_{i,t} + \beta_6 fc_{i,t} + \beta_7\, CG\ dummy * fc_{i,t} + \beta_8\, CG\ dummy + \lambda_t + v_{i,t} \quad (1)$$

where *i* denotes the countries under investigation for which data is available during the observed period ($i = 1, ..., 90$), *t* stands for the four-year non-overlapping intervals ($t = 9$ and refers to the non-overlapping intervals: 1973-1976; 1977-1980; ...; 2005-2008; however, as was already noted, transition countries are covered only in the 1997-2008 period), $gr_{i,t}$ is the average growth of real GDP per capita (measured in purchasing power parity terms in the Penn world tables 6.3), $fc_{i,t}$ represents alternative measures of a country's reliance on foreign capital, and the *CG dummy* represents an indicator variable for membership into three different EU-related groups (EU10, EU candidates and EU neighborhood). Also, α_1 is the common intercept, α_2 is the coefficient on the lagged dependent variable, β_i denotes the slope coefficients of the vector of explanatory variables (Table 1), λ_t stands for the period-specific effects (time dummies), and $v_{i,t}$ is the stochastic disturbance term, assumed to be independently and identically distributed. The inclusion of the period effects is to account for common shocks and cross-sectional interdependence. The $v_{i,t}$'s are four calendar years apart (i.e., four-year spans) and are less likely to be serially correlated than in an annual data setup. In order to address the problems of potential endogeneity and instrument proliferation, data for the explanatory variables enter the regression in the year preceding the four-year non-overlapping interval. As mentioned earlier, exceptions are the different indicators of international financial integration, the gross national saving and the gross capital formation, which are treated as endogenous variables and enter the regression as contemporaneous averages in each four-year period.

The relationship between foreign capital and growth is estimated through two different specifications: (1) the current account balance as a summary measure of the net amount of international capital inflows (the flow perspective), and (2) the country's net foreign asset (NFA) position as an indicator of the net external wealth and the degree of international risk sharing (the stock perspective). The model is also augmented by intercept and slope dummy variables (interaction terms) for three European sub-groups to account for potentially different growth effects in the reliance on foreign capital. This is one of the extensions we pursue relative to earlier studies in an attempt to identify differences across emerging European countries. Specifically, as suggested above, three separate dummy variables for the new EU member states, the EU candidate and potential candidate countries, and the EU neighborhood countries—see

Appendix 1 for a discussion of the country groups. The dummy variable assumes a value of one if the economy belongs to a group and zero otherwise.[5]

Table 1. Explanatory Variables and Expected Signs

Symbol	Description of the explanatory variables	Expected sign
$lngdppc_{i,t}$	Logarithm of the initial level of real GDP per capita in 1985 US $ (measured in purchasing power parity terms)	–
$edu_{i,t}$	Educational attainment of the adult population over age 25 (average years of schooling)	+
$popgr_{i,t}$	Annual growth rate of country's population	+ / –
$relpi_{i,t}$	Relative price of investment	+
$to_{i,t}$	Trade openness (sum of exports and imports, in percent of GDP)	+ / –
$fc_{i,t}$	Different measures of country's reliance on foreign capital	
	$cab_{i,t}$ Current account balance (in percent of GDP)	+ / –
	$nfa_{i,t}$ Net foreign assets (in percent of GDP)	+ / –
$agedep_{i,t}$	Age dependency ratio [(0-14 and 65+) / 15-64]	–
$gns_{i,t}$	Gross national saving (in percent of GDP)	+
$inv_{i,t}$	Gross capital formation (in percent of GDP)	+

Note: "+" indicates a positive relationship, "–" a negative relationship, and zero denotes a theoretically ambiguous relationship with the dependent variable.

In order to investigate the consistency of the empirical results, the baseline regression is amended with two control variables: gross capital formation and gross national saving, both expressed as a percentage of a country's GDP. This enables us to understand the channels through which foreign capital affects growth. Due to the simultaneity problem, the investment and saving rates and the current account balances are treated as endogenous variables in the system GMM model. In addition, we explore the role of financial depth and financial frictions by adding threshold effects. Finally, recognizing that the crisis had a severe negative impact on emerging Europe's growth, we revise the sample by excluding countries that are deemed to have had unusually large external imbalances that ended in sharp reversals in GDP and conclude that foreign savings and growth link is indeed robust in a subset of emerging European countries.

4. Economic Growth and Foreign Capital Inflows

A Flow Perspective

The estimation results from the baseline growth regression are presented in Table 2. The estimated coefficients on income per capita are statistically significant at the 1 percent level and reveal strong and consistent impact on growth.[6] In line with the beta-convergence hypothesis, the initial per capita income is negatively and strongly correlated with the rate of economic growth. More precisely, a lower initial GDP per capita by 10 percent will, on average, lead to 0.23 percentage points higher rate of GDP per capita growth (other things being equal). Given the

[5] In specifications not reported we also include dummy variables for other regional groups; these are not statistically significant and are excluded from the more parsimonious specification described in this paper.

[6] The diagnostic tests for residual autocorrelation indicate that in all empirical specifications, the null hypothesis of m_1 statistic (no first-order autocorrelation in the differenced error terms) is decisively rejected, whereas the m_2 statistic provides insufficient evidence to reject the hypothesis of no second-order autocorrelation in the differenced error terms. As presented in Table 2, the Hansen test of over identifying restrictions conducted on the second-step estimators, which considers whether the instruments are uncorrelated with the error term, provides no evidence to reject the null hypothesis that the instruments used are valid.

substantial cross-country income disparities, the coefficient indicates the large catching up potential of the developing and transition economies.

The impact of human capital, proxied by the average years of schooling of population above 25, is significant at the 1 percent level in all regressions. It suggests that an additional year of schooling is likely to accelerate the average annual rate of GDP growth between 0.47 and 0.50 percentage points. It also highlights the role of knowledge, innovation and stock of human capital in any high-growth strategy. The estimated coefficient on the population growth is also robust across all growth equations and is consistent with the proposition of neoclassical theory; specifically, a one percent increase of the total population is associated with reduced medium-term growth rate by about 0.34 percentage points.

In contrast, the influence of relative price of investment is statistically insignificant and, in some cases, has the opposite sign from the *a priori* expectations presented in Table 1. The empirical results also support the finding that greater exposure to international trade is associated with improved growth performance, although the overall impact is moderate; namely, an increase in a country's trade openness by 10 percent of GDP leads to a 0.1 percentage point higher rate of economic growth.

The coefficient on the current account balance for the reference group (the full sample of countries) is generally positive, but marginally insignificant in all regressions. However, it masks heterogeneous experiences across different emerging European sub-groups. A worsening of the current account deficits (equivalent to larger inflow of foreign capital) by 1 percent of GDP is likely to lead to higher growth of GDP per capita by 0.25 percentage points in the EU10 countries and 0.13 percentage points among the EU candidate countries (Table 2, columns 2, 3 and 5). Seemingly moderate, the cumulative growth impact of the widening external imbalances of emerging European countries is much stronger. In fact, some of the transition economies have run persistent and sizeable current account deficits over the past decade.

In contrast, the positive coefficient on the interaction term for the EU neighborhood countries reveals a different behavior between foreign savings and growth (Table 2, columns 4 and 5). It suggests that a reduction of the external imbalances and, consequently, a reduction in foreign financing needs are associated with a growth dividend. An improvement of the current account in these economies by 1 percent of GDP leads to between 0.48 percentage points higher rate of growth. Thus, the EU neighborhood appears to have the features that have characterized developing countries outside Europe in terms of the lack of a positive link between foreign savings and growth.

A Stock Perspective

The persistent and widening current account deficits in some of the EU15 countries (notably, Greece, Portugal and Spain), the EU10 and EU candidate countries contributed to significant deterioration of their net foreign asset positions over the past decade (Figure 6).[7] But this is less

[7] The net positions are defined as a difference between the stock of foreign assets held by domestic residents and the stock of domestic liabilities held by foreign residents. The net foreign asset positions reflect not only the current account balance, but also the valuation gains or losses on the national net foreign portfolio, which have become increasingly important in financially open economies (e.g., Obstfeld, 2004).

the case in EU neighborhood countries, possibly on account of positive terms of trade shocks and remittances flows experienced by these countries, or the lagged progress with economic stabilization in these countries; in fact, for a variety of reasons, these countries seem to have experienced a lagged transition from plan to market and their progress towards EU membership is also more uncertain.

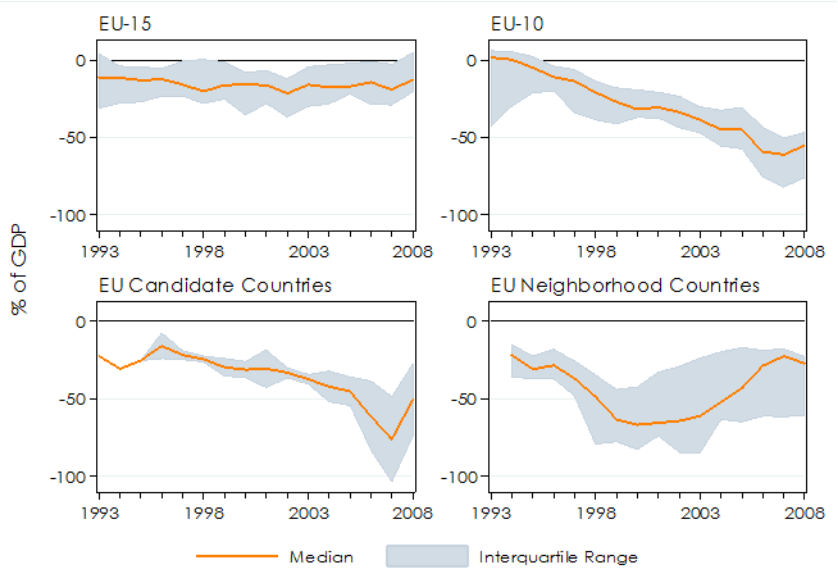
Table 2. Foreign Capital and Growth—A Flow Perspective (Foreign Savings)

Growth regressions	Dependent variable is four-year average growth of real GDP per capita (PPP)									
Explanatory variable	[1]		[2]		[3]		[4]		[5]	
Log of initial GDP per capita [A]	-2.364		-2.327		-2.426		-2.322		-2.303	
	[0.440]	***	[0.434]	***	[0.450]	***	[0.424]	***	[0.425]	***
Educational attainment of population above 25	0.489		0.470		0.500		0.493		0.479	
	[0.121]	***	[0.119]	***	[0.124]	***	[0.112]	***	[0.114]	***
Population growth	-0.352		-0.351		-0.346		-0.342		-0.339	
	[0.162]	**	[0.156]	**	[0.162]	**	[0.149]	**	[0.141]	**
Relative price of investment	0.031		0.024		0.037		-0.047		0.001	
	[0.501]		[0.491]		[0.498]		[0.583]		[0.561]	
Trade openness (in percent of GDP)	0.011		0.011		0.011		0.011		0.011	
	[0.003]	***	[0.003]	***	[0.003]	***	[0.003]	***	[0.003]	***
Current account balance; in percent of GDP, four year average (CAB)	0.044		0.055		0.053		0.032		0.044	
	[0.040]		[0.040]		[0.046]		[0.042]		[0.053]	
EU-10 country dummy times CAB			-0.262						-0.245	
			[0.094]	***					[0.101]	**
EU candidates country dummy times CAB					-0.133				-0.124	
					[0.055]	**			[0.062]	**
EU neighborhood country dummy times CAB							0.476		0.485	
							[0.127]	***	[0.135]	***
Common intercept	20.640		20.456		21.139		20.272		20.159	
	[3.654]	***	[3.608]	***	[3.731]	***	[3.648]	***	[3.627]	***
Number of observations	584		584		584		584		584	
Number of countries	88		88		88		88		88	
Number of instruments	30		35		35		35		45	
Hansen test for over-identifying restrictions	0.064 [B]		0.153		0.059 [B]		0.164		0.204	
Arellano-Bond AR(1) test (p-value)	0.000		0.000		0.000		0.000		0.000	
Arellano-Bond AR(2) test (p-value)	0.812		0.790		0.847		0.749		0.769	

Notes: [A] GDP data are adjusted for international differences in purchasing power of the dollar. [B] When the p-value of the Hansen test is a borderline case, the instruments are validated by the supplementary evidence from the Sargan test of the over-identifying restrictions. Robust standard errors in parentheses; asterisks indicate statistical significance at the ***1, **5, and *10 percent level. Data for the transition economies refer only from 1997 onwards. All equations include time period and group-specific dummies.

Although the stock approach to global imbalances has mostly been applied when explaining the international adjustment mechanism (e.g., Milesi-Ferretti and Razin, 1998 and 2000), recent empirical studies have also listed the net foreign assets as a determinant of economic growth (e.g., Prasad et al., 2007; and Abiad et al., 2009). On theoretical grounds, the impact of cross-border holdings of assets and liabilities on economic growth is ambiguous due to the variety of channels at work. An improvement of the NFA position reduces the aggregate capital domiciled in the home economy. Hence, an improvement in the NFA position could be negatively correlated with economic growth. On the other hand, larger cross-border holdings of foreign assets improve the NFA position and increase the net inflow of factor incomes in the creditor economy. As Prasad et al. (2007) conclude, this implies that the countries that have accumulated more assets are expected to grow faster. But are emerging European countries also different? Assessing the evidence requires an empirical resolution.

Figure 6. Net Foreign Asset Positions in Europe



Source: Updated and extended dataset from Lane and Milesi-Ferretti (2007).

To this end, the growth equations presented in Table 3 reveal a differentiated impact of the NFA positions across country groups, thus providing mixed evidence of growth benefits from a stock perspective. Since the net foreign asset positions of the EU10 and EU candidate countries are negative, in part because of the larger holdings of external liabilities, this implies that a further deterioration of the net foreign asset positions is likely to be associated with a higher rate of economic growth—the opportunities made possible by foreign capital that we highlight in this paper. But this result is statistically significant only for the EU candidate countries; namely, a deterioration of the NFA position by 10 percent of GDP is likely to be associated with 0.47 percentage point higher medium-term growth (Table 3, column 3). The statistically insignificant slope coefficient for the net foreign assets in the EU10 economies, while still with a negative sign as was the case for EU candidate countries, suggests that valuation effects could be high, thus causing a disassociation between the current account balance and the change in the net foreign asset position. Consistent with our earlier results for foreign savings, the opposite effect holds for the EU neighborhood countries; namely, a positive NFA position is positively correlated with growth (Table 3, columns 4 and 5). This is the only European sub-group that conforms to the finding by Prasad et al. (2007) that countries that rely less on foreign financing grow faster and is consistent with our earlier results on the flow relationship between the current account balance and economic growth.

De Jure and De Facto Measures of Financial Integration

Since the increasing reliance on external finance in the last decade was enabled by the gradual capital account liberalization in emerging Europe, our empirical approach also aims at testing whether the legal perspective on the international financial integration can explain growth dynamics. First, we use a de jure index of capital account liberalization; namely, the Chinn and Ito (2008) indicator that is derived from a principal component analysis of four variables—the presence of multiple exchange rates, the restrictions on current account transactions, the restrictions on capital account transactions, and the requirement of the surrender of export

proceeds.[8] As presented in the first four columns of Table 4, there appears to be no systematic relationship between capital controls (referred to as KAOPEN in the table) and medium-term economic growth.

Table 3. Foreign Capital and Growth—A Stock Perspective (Net Foreign Assets)

Growth regressions	Dependent variable is four-year average growth of real GDP per capita (PPP)									
Explanatory variable	[1]		[2]		[3]		[4]		[5]	
Log of initial GDP per capita [A]	-2.692		-2.770		-2.695		-2.237		-2.638	
	[0.458]	***	[0.464]	***	[0.471]	***	[0.517]	***	[0.541]	***
Educational attainment; pop > 25	0.532		0.534		0.534		0.378		0.459	
	[0.121]	***	[0.120]	***	[0.122]	***	[0.149]	**	[0.152]	***
Population growth	-0.296		-0.287		-0.317		-0.299		-0.294	
	[0.166]	*	[0.170]	*	[0.171]	*	[0.169]	*	[0.172]	*
Relative price of investment	-0.549		-0.635		-0.541		-0.960		-1.130	
	[0.508]		[0.507]		[0.526]		[0.522]	*	[0.560]	*
Trade openness (in percent of GDP)	0.010		0.009		0.010		0.008		0.008	
	[0.003]	***	[0.004]	**	[0.003]	***	[0.003]	***	[0.004]	***
Net foreign assets; in percent of GDP, four year average (NFA)	0.010		0.014		0.011		0.011		0.016	
	[0.006]		[0.007]	*	[0.007]		[0.006]	*	[0.008]	*
EU10 country dummy times NFA			-0.049						-0.056	
			[0.033]						[0.035]	
EU candidates country dummy times NFA					-0.047				-0.042	
					[0.021]	**			[0.022]	*
EU neighborhood dummy times NFA							0.101		0.110	
							[0.052]	*	[0.052]	**
Common intercept	24.235		25.116		24.306		21.700		24.996	
	[4.073]	***	[4.172]	***	[4.235]	***	[4.231]	***	[4.519]	***
Number of observations	579		579		579		579		579	
Number of countries	88		88		88		88		88	
Number of instruments	30		40		36		35		51	
Hansen test for over-id. restrictions	0.010[B]		0.046[B]		0.021[B]		0.068[B]		0.324	
Arellano-Bond AR(1) test (p-value)	0.000		0.000		0.000		0.000		0.000	
Arellano-Bond AR(2) test (p-value)	0.968		0.962		0.970		0.975		0.981	

Notes: [A] GDP data are adjusted for international differences in purchasing power of the dollar. [B] When the *p*-value of the Hansen test is a borderline case, the instruments are further validated by the supplementary evidence from the Sargan test of the over-identifying restrictions. Robust standard errors in parentheses; asterisks indicate statistical significance at the ***1, **5, and *10 percent level. Data for the transition economies refer only from 1997 onwards. All equations include time period and group-specific dummies.

The results are remarkably similar when *de facto* or quantity-based measures of the international financial openness are used (Table 4, columns 5 to 8). In this case, a country's international financial openness is defined as the sum of its gross stocks of foreign assets and liabilities (scaled by GDP) as measured by Lane and Milesi-Ferretti (2007); referred to as FINOPEN in the table. The results for most country groups are in line with the prevailing view in the literature: the role of international financial openness is indirect, with collateral benefits, such as the development of the domestic financial sector, the discipline on macroeconomic policies, and the promotion of specialization (e.g., Kose et al. 2009) being the reasons why foreign capital supports growth. An important exception is the group of EU candidates, since the impact is direct and positive: an increase of the *de facto* international financial openness by 10 percent of GDP is associated with higher medium-term growth rate by 0.2 percentage points (Table 4, columns 6 and 8).

[8] The legal perspective on the international financial integration mainly focuses on the capital account restrictions reported in the International Monetary Fund's Annual Report on Exchange Arrangements and Exchange Restrictions.

Table 4. Financial Integration and Growth—De Jure and De Facto Measures

Growth regressions	Dependent variable is four-year average growth of real GDP per capita (PPP)															
Explanatory variable	[1]		[2]		[3]		[4]		[5]		[6]		[7]		[8]	
Log of initial GDP per capita [A]	-2.440		-2.612		-2.576		-2.560		-1.926		-1.895		-2.049		-2.097	
	[0.436]	***	[0.405]	***	[0.430]	***	[0.455]	***	[0.413]	***	[0.415]	***	[0.395]	***	[0.409]	***
Educational attainment; pop. above 25	0.515		0.556		0.542		0.519		0.435		0.432		0.444		0.463	
	[0.114]	***	[0.105]	***	[0.109]	***	[0.120]	**	[0.113]	***	[0.113]	***	[0.118]	***	[0.121]	***
Population growth	-0.359		-0.334		-0.331		-0.377		-0.389		-0.421		-0.405		-0.400	
	[0.134]	***	[0.126]	***	[0.147]	**	[0.156]	**	[0.158]	**	[0.160]	**	[0.159]	**	[0.165]	**
Relative price of investment	0.255		0.090		0.063		0.088		0.291		0.363		0.256		0.171	
	[0.314]		[0.326]		[0.425]		[0.391]		[0.474]		[0.458]		[0.482]		[0.521]	
Trade openness (in percent of GDP)	0.009		0.009		0.009		0.009		0.011		0.010		0.012		0.012	
	[0.004]	**	[0.004]	**	[0.004]	**	[0.004]	**	[0.004]	***	[0.004]	***	[0.003]	***	[0.004]	***
De jure financial openness (KAOPEN)	0.190		0.167		0.222		0.238									
	[0.126]		[0.118]		[0.156]		[0.180]									
EU10 country times KAOPEN	0.526						0.450									
	[0.920]						[0.872]									
EU candidates country times KAOPEN			0.111				0.044									
			[1.164]				[1.191]									
EU neighborhood times KAOPEN					-3.555		-4.076									
					[6.018]		[6.165]									
De facto financial openness (FINOPEN)									0.000		0.000		0.000		0.000	
									[0.001]		[0.001]		[0.001]		[0.001]	
EU10 country times FINOPEN									0.002						0.003	
									[0.011]						[0.011]	
EU candidates country times FINOPEN											0.018				0.018	
											[0.006]	***			[0.006]	***
EU neighborhood times FINOPEN													-0.123		0.124	
													[0.200]		[0.190]	
Common intercept	21.064		22.484		24.308		22.395		16.906		16.663		17.954		18.428	
	[3.705]	***	[3.516]	***	[3.789]	***	[3.961]	***	[3.592]	***	[3.631]	***	[3.364]	***	[3.529]	***
Number of observ.	564		564		564		564		564		564		564		564	
Number of countries	86		86		86		86		86		86		86		86	
Number of instruments	41		38		36		53		41		37		36		52	
Hansen test for over-identifying restrictions	0.222		0.235		0.085[B]		0.296		0.159		0.129		0.093[B]		0.380	
AB AR(1) test	0.000		0.000		0.000		0.000		0.000		0.000		0.000		0.000	
AB AR(2) test	0.969		0.880		0.932		0.885		0.972		0.967		0.997		0.985	

Notes: [A] GDP data are adjusted for international differences in purchasing power of the dollar. [B] When the p-value of the Hansen test is a borderline case, the instruments are further validated by the supplementary evidence from the Sargan test of the over-identifying restrictions. Robust standard errors in parentheses; asterisks indicate statistical significance at the ***1, **5, and *10 percent level. Data for the transition economies refer only from 1997 onwards. All equations include time period and group-specific dummies.

5. Foreign Savings and Growth Channels

How Do Foreign Savings Support Growth in Emerging Europe?

So far we have established that foreign savings support growth in many—but not all—emerging European countries. In a growth equation, the interactions between current account balances and two of the EU-specific country groups mentioned before have a negative and statistically significant point estimate. The coefficient for the EU10 has a larger magnitude (in absolute value) than is the case for EU candidate countries; in other words, a stronger link between foreign savings and growth appears to exist among the EU10 countries (Table 2, column 5). The varying strength in the relationship across these two groups of countries is in itself interesting. It could perhaps reflect a combination of early EU accession and more rapid transition to a market economy. It is also worth noting that countries where EU membership prospects are still

distant—essentially the EU neighborhood—behave much as do emerging markets outside Europe. For them, at least for now, foreign savings have not supported growth.

How can the foreign savings and growth link be explained? There is a sizeable literature that suggests that foreign savings are detrimental for growth. The argument put forward by this literature is that foreign savings substitute for domestic savings and thus have a limited impact on investment and long-run growth (e.g., Aizenman et al., 2004). The explanation is that the absorptive capacity of developing countries remains limited despite the availability of financing and, as a result, foreign savings only trigger a real overvaluation of the currency. In turn, this weakens the profitability of investment. In sum, low levels of financial intermediation and/or weak institutions preclude the effective use of foreign savings.

Against this background, we perform a battery of consistency checks to investigate the strength and the intermediating mechanisms of the relationship between foreign capital and economic growth. Firstly, the baseline regression is amended with ratios of investment and savings to GDP, both being separately introduced as endogenous to the growth process. The purpose is to explore how foreign savings supports growth. Since this is a particularly demanding check, given the corresponding likelihood of multicollinearity and instrument proliferation, the EU10 and EU candidate countries are treated as a single group—after all, these are the only groups that seem to benefit from foreign savings (Table 5, column 2; column 1 repeats the main result in Table 2).[9]

More precisely, controlling for gross capital formation in our baseline regression eliminates the effect of the current account on growth in the case of the EU10 and EU candidate countries. In fact, the coefficient on foreign savings loses statistical significance and half of its initial magnitude (Table 5, column 3). This would seem to suggest that the negative correlation between foreign capital and growth for the EU10 and the EU candidate countries stems from the relationship between investment and growth. In other words, it appears that foreign savings make it possible to implement investment opportunities that would otherwise remain unfunded in these countries. Moreover, when controlling for national savings (Table 5, column 4), the growth impact of foreign capital appears to be independent from the national savings rate. The coefficient on the joint EU10 and EU candidate group declines, but only marginally. Hence, it can be credibly argued that foreign capital affects growth primarily through the investment channel. In contrast, since the coefficient on the current account balance for the EU neighborhood countries remains significant after including either the investment or the savings regressor, the relationship between foreign capital and growth, as argued before, appears to be independent from the saving and investment channels.

Why is Emerging Europe Different to Other Developing Countries?

The quality of financial intermediation is crucial for foreign savings to support growth. Households borrow from future income streams for consumption smoothing purposes or firms pursue profitable investment opportunities. In either case, the financial system needs to intermediate the foreign financing that makes consumption smoothing and investment possible. There are two alternative explanations for what makes the financial intermediation process more

[9] Not doing so would result in too many instruments and the over-identification of our specification

or less effective. One relates to the existence of "thresholds in financial development" that improve the flow and quality of information and enhance a country's absorptive capacity (Blanchard and Giavazzi, 2002). Another relates to the existence of "financial friction" and how this impacts intermediation. These frictions might be linked to institutional developments.

Table 5. How is Foreign Savings Supporting Growth? Investment Opportunities versus Savings Substitutions

Growth regressions	Dependent variable is four-year average growth of real GDP per capita (PPP)							
Explanatory variable	[1]		[2]		[3]		[4]	
Log of initial GDP per capita [A]	-2.303		-2.291		-2.121		-2.199	
	[0.425]	***	[0.428]	***	[0.407]	***	[0.527]	***
Educational attainment of population above	0.479		0.492		0.455		0.424	
25 years of age	[0.114]	***	[0.113]	***	[0.140]	***	[0.154]	***
Population growth	-0.339		-0.327		-0.427		-0.379	
	[0.141]	**	[0.140]	**	[0.177]	**	[0.152]	**
Relative price of investment	0.001		-0.035		-0.514		-0.742	
	[0.561]		[0.573]		[0.773]		[0.883]	
Trade openness (in percent of GDP)	0.011		0.011		0.000		0.002	
	[0.003]	***	[0.003]	***	[0.004]		[0.004]	
Current account balance; in percent of GDP,	0.044		0.047		0.079		-0.107	
four-year averages (CAB)	[0.053]		[0.053]		[0.061]		[0.071]	
EU-10 country dummy x CAB	-0.245							
	[0.101]	**						
EU candidates country dummy x CAB	-0.124							
	[0.062]	**						
EU 10 and EU candidate dummy x CAB			-0.165		-0.085		-0.141	
			[0.077]	**	[0.059]		[0.062]	**
EU neighborhood country dummy x CAB	0.485		0.471		0.495		0.445	
	[0.135]	***	[0.130]	***	[0.178]	***	[0.129]	***
Gross capital formation (in percent of GDP, four-year averages)					0.318			
					[0.068]	***		
Gross national saving (in percent of GDP, four-year averages)							0.228	
							[0.066]	***
Number of observations	584		584		584		584	
Number of countries	88		88		88		88	
Number of instruments	45		40		49		49	
Hansen test for over-identifying restrictions	0.204		0.204		0.188		0.062[B]	
Arellano-Bond AR(1) test (p-value)	0.000		0.000		0.000		0.000	
Arellano-Bond AR(2) test (p-value)	0.769		0.725		0.680		0.937	

Notes: [A] GDP data are adjusted for international differences in purchasing power of the dollar. [B] When the p-value of the Hansen test is a borderline case, the instruments are further validated by the supplementary evidence from the Sargan test of the over-identifying restrictions. Robust standard errors in parentheses; asterisks indicate statistical significance at the ***1, **5, and *10 percent level. Data for the transition economies refer only from 1997 onwards. All equations include time period and group-specific dummies.

The next step, therefore, is to assess the role of financial development and financial frictions. Financial development is examined by adding indicators of financial depth into a growth equation and exploring their impact on the underlying foreign savings-growth link among the EU-specific country groups we have highlighted throughout this paper. The assumption is that only after a certain threshold of financial depth is reached are foreign savings good for growth. More precisely, once such a threshold has been exceeded, EU-specific foreign savings for the EU10 and EU candidate countries should no longer be important. If such thresholds do not exist, however, it might then be the case that financial frictions are more important. In other words, it may be institutional development what makes the effective use of foreign savings possible. Again, if thresholds in indicators of financial frictions are included, then this should

reduce the role of EU-specific foreign savings. If this is not the case, then other EU-specific factors may be more instrumental.

The main conclusion is that what matters for growth are institutional factors and that these are likely to be EU-specific. Specifically, two thresholds are used; a threshold defined when financial depth belongs to the top two quartiles (Table 6, column 2) and a threshold for the top quartile only (Table 6, column 3). In either case, the importance and magnitude of the EU-specific foreign savings interaction remain unchanged when financial development is used to construct the threshold variable (i.e., it barely changes from -0.164 without thresholds effects to a coefficient of -0.169 when using the quartile 4 threshold definition). This suggests that financial development is not the driver of the foreign savings and growth link. Slightly different is the conclusion reached using measures of institutional development. We use the first principal component of six ICRG indicators on institutional development to construct the threshold variable. Again, two thresholds are used; a threshold defined when institutional development belongs to the top two quartiles (Table 6, column 2) and a threshold for the top quartile only (Table 6, column 3). The impact of the EU-specific foreign savings interactions weakens for the highest quartile (column 6 compared to the benchmark in column 4); the relevant coefficient changes from -0.674 to -0.505, but remains statistically significant). This suggests that EU membership might reflect institutional development factors. But the observed weakening is also limited, suggesting that EU-specific factors are still at play. The fact that institutional indicators do not eliminate the effect of EU-specific regressors might reflect that EU membership (actual or prospective) acts as an anchor for expectations of improved institutional quality even if actual change on the ground improves more slowly.

Unsustainable Pre-Crisis External Imbalances

The next step is to investigate whether the estimation results are driven by outlier observations. The collapse of output in 2009 among some emerging European countries undoubtedly exceeded the experience of most advanced and developing countries. Thus, it is fair to argue that the growth benefits we have observed might have been eliminated by the global financial crisis and the unique impact it had in some emerging European countries. To test for this, we proceed to drop what could be considered outlier observations. We do so by dropping from the sample the (i) above average growth observations among emerging European countries, (ii) above average plus 1 standard deviation growth countries, and (iii) plus-minus 1 standard deviation growth countries. In effect this is equivalent to dropping between 15 and 35 percent of the observations available for emerging European countries and, in particular, those where growth was the highest and accompanied by unusually large and unsustainable external imbalances.[10] To be sure, the approach is somewhat mechanical. But attempting to explain the great recession with a growth equation is clearly inappropriate. Instead, we simply wish to understand better if it is the outliers of the pre-crisis period what drives the results we have discussed so far.

[10] Dropping all the observations of the 2005-08 period would have been also useful, but would reduce the power of the test as we would only have two 4-year periods. Thus, eliminating the high growth cases only seemed like a better alternative as it allowed us to maintain those emerging European countries that, for the most part, were engaged in sustainable foreign financed growth. The countries dropped through the three methodologies outlined above include the Baltic countries, and some of the countries that at the peak of the global financial crisis required financial assistance from the IMF (such as Romania and Serbia).

Table 6. Why is Emerging Europe Different? Financial Development versus Frictions

Growth regressions	Dependent variable is growth in GDP per capita (PPP terms)											
	Financial development						Institutional development					
Explanatory variable	[1]		[2]		[3]		[4]		[5]		[6]	
Log of initial GDP per capita [A]	-1.555		-1.460		-1.500		-1.738		-1.569		-1.635	
	[0.431]	***	[0.444]	***	[0.481]	***	[0.742]	**	[0.526]	***	[0.598]	***
Educational attainment; pop. above 25	0.363		0.337		0.306		0.269		0.240		0.239	
	[0.094]	***	[0.090]	***	[0.092]	***	[0.146]	*	[0.161]		[0.139]	*
Population growth	-0.284		-0.322		-0.328		-0.275		-0.246		-0.281	
	[0.134]	**	[0.129]	**	[0.126]	**	[0.170]		[0.123]	**	[0.147]	*
Relative price of investment	0.041		0.108		-0.066		-0.192		-0.331		-0.256	
	[0.490]		[0.515]		[0.628]		[0.653]		[0.734]		[0.746]	
Trade openness (in percent of GDP)	0.005		0.005		0.005		0.001		-0.000		0.002	
	[0.003]		[0.004]		[0.004]		[0.007]		[0.006]		[0.006]	
Current account balance (CAB)	0.032		0.028		0.029		0.019		0.031		0.016	
	[0.034]		[0.039]		[0.039]		[0.038]		[0.057]		[0.041]	
EU10 and candidate countries times CAB	-0.164		-0.169		-0.169		-0.674		-0.735		-0.505	
	[0.051]	***	[0.057]	***	[0.057]	***	[0.255]	**	[0.260]	***	[0.264]	*
EU neighborhood times CAB	0.488		0.477		0.477		0.498		0.429		0.499	
	[0.082]	***	[0.101]	***	[0.101]	***	[0.086]	***	[0.095]	***	[0.074]	***
CAB times dummy for financial development; quartile 3 and above			0.006									
			[0.049]									
CAB times dummy for financial development; quartile 4					-0.025							
					[0.077]							
CAB times dummy for institutional development; quartile 3 and above									0.027			
									[0.075]			
CAB times dummy for institutional development; quartile 4											-0.037	
											[0.055]	
Common intercept	14.418		13.779		14.825		17.958		16.586		17.378	
	[3.979]	***	[4.161]	***	[4.540]	***	[6.663]	***	[4.831]	***	[5.259]	***
Number of observations	329		329		329		208		208		208	
Number of countries	88		88		88		59		59		59	
Number of instruments	37		46		46		37		46		46	
Hansen test for over-id. restrictions	0.305		0.567		0.269		0.511		0.598		0.720	
Arellano-Bond AR(1) test (p-value)	0.000		0.000		0.000		0.002		0.001		0.002	
Arellano-Bond AR(2) test (p-value)	0.741		0.836		0.976		0.315		0.268		0.290	

Notes: Other growth determinants included (but not reported) are population growth, educational attainment, trade openness, and the relative price of investment goods. Robust standard errors below each point estimate. ***, ** and * denote significance at the 1, 5 and 10 percent levels, respectively. All equations include time period and group-specific dummies. Data for the transition economies refer only from 1997 onwards. All equations include time period and group-specific dummies.

The estimations confirm our earlier results; see Table 7. In fact, the growth impact of foreign capital in the EU10 and EU candidate countries is even stronger; the magnitude of the coefficient is about three times larger than the previous estimates. Two hypotheses are worth putting forward. First, the impact on growth is not a statistical artifact of the high, but unsustainable, growth episodes of the pre-crisis period among European transition countries. Second, the excesses of the pre-crisis period were not as supportive of medium-term growth. A more detailed assessment, however, is hampered by the small sample size. Still, we believe the evidence is sufficiently clear in that prospective EU membership has been a sound impetus for institutional and economic reforms in the EU10 and the EU candidate economies, and this has made it possible for them to strengthen their capacity to absorb effectively foreign capital. Of course the pre-crisis excesses were also not as supportive of medium-term growth and thus there is much to learn from the case of emerging European countries with more sustainable growth experiences.

Robustness Tests

We conduct several robustness tests. Growth-conducive effects of the increased reliance on external finance in emerging Europe are also found in the panel estimation based on a revised sample that refers only to the period from 1997 onwards (not reported). Specifically, the coefficients on the foreign capital variables retain the statistical significance and magnitude in both the EU10 and EU candidate countries. The re-estimation suggests that the relationship between the explanatory variables and growth holds even when we exclude the growth experience of other economies before the mid-1990s. Finally, the consistency of the results is investigated in a sample that excludes economies with annual GDP per capita (in PPP terms) above US$20,000; i.e., advanced economies (also not reported). The rationale is to examine whether the financial integration experience of emerging Europe displays a different growth pattern from the countries that are also facing economic development challenges. Again, the results show that the coefficients of interest are consistent with our previous findings.

Table 7. Pre-Crisis Excesses Do Not Undo the Foreign Savings and Growth Link

Growth regressions	Dependent variable is four-year average growth of real GDP per capita (PPP)		
	Robustness to Changes in Sample. Exclude from Emerging Europe the countries with:		
	(i) above-average growth	(ii) observations with + 1 SD	(iii) observations with ± 1 SD
Explanatory variable	1973-08	1973-08	1973-08
Log of initial GDP x capita [A]	-2.259	-2.190	-2.201
	[0.433] ***	[0.430] ***	[0.429] ***
Educational attainment of	0.470	0.453	0.455
pop. > 25 years of age	[0.116] ***	[0.115] ***	[0.116] ***
Population growth	-0.314	-0.328	-0.353
	[0.142] **	[0.143] **	[0.147] **
Relative price of investment	-0.104	-0.049	-0.029
	[0.614]	[0.573]	[0.576]
Trade openness (in percent of	0.011	0.011	0.011
GDP)	[0.003]	[0.003]	[0.003]
Current account balance; in	0.049	0.046	0.047
% GDP, 4-year (CAB)	[0.056]	[0.055]	[0.054]
EU 10 and EU candidate	-0.609	-0.660	-0.568
dummy times CAB	[0.343] *	[0.277] ***	[0.304] *
EU neighborhood country	0.488	0.474	0.480
dummy times CAB	[0.126] ***	[0.121] ***	[0.128] ***
Number of observations	565	573	568
Number of countries	88	88	88
Number of instruments	40	40	40
Hansen test for over-identifying restrictions	0.236	0.206	0.227
Arellano-Bond AR(1) test	0.000	0.000	0.000
Arellano-Bond AR(2) test	0.706	0.711	0.736

Notes: [A] GDP data are adjusted for international differences in purchasing power of the dollar. Robust standard errors in parentheses; asterisks indicate statistical significance at the ***1, **5, and *10 percent level. All equations include time period and group-specific dummies. Data for the transition economies refer only from 1997 onwards. All equations include time period and group-specific dummies.

6. Concluding Remarks

This paper provides evidence that the new EU member states and the EU candidate countries have been able to speed up their income convergence through greater reliance on foreign capital. The growth equations reveal that the current account deficits are positively correlated with medium-term economic growth in those two groups of countries. The experience of the EU

neighborhood countries is different: they seem to face the same difficulties of other countries in their attempts to grow with other people's money. We argue that this counter-intuitive finding (albeit in line with the experience of other developing countries), may be attributed to the role of other drivers in their growth experience, such as the role of remittance inflows, the existence of unusually favorable terms of trade, and the lagging experience of their transition process that has made their EU membership prospects more remote. Additional research is needed for these countries.

In contrast, the de jure and de facto measures of international financial openness are not systematically related to medium-term economic growth in emerging Europe. This broad conclusion is in line with the conventional view that the benefits of the capital account liberalization are mostly catalytic and indirect, although there is some evidence that the higher degree of international financial integration of the EU candidate countries has been associated with accelerated economic growth.

Moreover, the positive correlation between foreign capital and economic growth in the EU10 and EU candidate countries appears to originate largely through the investment channel. That is, foreign capital enables the pursuit of investment opportunities that would otherwise remain unfunded. We also argue that the unique role of the European Union in the democratic stabilization and institutional reforms of the prospective members is at the core of the financial integration experience of the emerging European economies—and the reason why some countries in emerging Europe manage to succeed where other countries have failed; in fact, it is a reduction in financial frictions and not an increase in financial epth what appears to create the link between foreign savings and growth.

The results are fairly consistent across different empirical specifications, including estimations based on a revised sample that excludes: (i) outlier observations (three different measures are used in defining such outliers; specifically, the excesses of the pre-crisis period do not seem to be as supportive of growth, though a more detailed assessment is hampered by sample size problems), (ii) the period before the mid-1990s for all non-emerging European countries (transition countries already enter the sample from the mid-1990s), and (iii) the high-income countries in the sample.

Finally, given the abrupt end brought about by the crisis on the growth experience of emerging Europe, it is fair to ask if development through financial integration was worth the risks. On the whole, we believe the answer is on the positive. In fact, even after accounting for the sharp declines in real GDP of the past two years, most countries managed to make significant progress in their convergence aspirations. For example, Latvia's real GDP at end-2010 was 22 percent below the peak level reached in 2007, but this country still ranks 24th out of 184 countries in terms of convergence to EU15 average incomes since 2000. Of course there is also much to learn and avoiding the worst of the excesses brought about by external financing is warranted. Moreover, it is not less true that some countries managed to converge while building fewer sources of vulnerability. Going forward, the challenge is to keep a balance between growth and vulnerability choices while recognizing that "looking west" has numerous advantages. In sum, the strategy for emerging Europe is to make the most of the opportunities ahead, while minimizing the risks inherent in excessively leveraged balance sheets.

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Appendix 1. Country Coverage

Advanced economies (other than EU-15) (9): Australia (AUS), Canada (CAN), Israel (ISR), Japan (JPN), New Zealand (NZL), Norway (NOR), Singapore (SGP), Switzerland (CHE), United States (USA).

EU-15 (excluding Luxembourg) (14): Austria (AUT), Belgium (BEL), Denmark (DNK), Finland (FIN), France (FRA), Germany (DEU), Greece (GRC), Ireland (IRL), Italy (ITA), Netherlands (NLD), Portugal (PRT), Spain (ESP), Sweden (SWE), United Kingdom (GBR).

Latin America and the Caribbean (20): Argentina (ARG), Bolivia (BOL), Brazil (BRA), Chile (CHL), Colombia (COL), Costa Rica (CRI), Dominican Republic (DOM), Ecuador (ECU), El Salvador (SLV), Guatemala (GTM), Honduras (HND), Jamaica (JAM), Mexico (MEX), Nicaragua (NIC), Panama (PAN), Paraguay (PRY), Peru (PER), Trinidad and Tobago (TTO), Uruguay (URY), Venezuela (VEN).

East Asia (with market access) (7): China, People's Republic of (CHN), India (IND), Indonesia (IDN), Korea, Republic of (KOR), Malaysia (MYS), Philippines (PHL), Thailand (THA).

Other emerging economies and middle-income countries (15): Algeria (DZA), Botswana (BWA), Egypt, Arab Republic of (EGY), Gabon (GAB), Iran, Islamic Republic of (IRN), Jordan (JOR), Kazakhstan (KAZ), Libya (LBY), Mauritius (MUS), Morocco (MAR), Pakistan (PAK), Russian Federation (RUS), South Africa (ZAF), Syria (SYR), Tunisia (TUN).

Low-income countries (6): Kyrgyz Republic (KGZ), Namibia (NAM), Sri Lanka (LKA), Swaziland (SWZ), Tajikistan (TJK), Vietnam (VNM).

Central and Eastern Europe (EU10 minus Bulgaria; this country is excluded due to lack of one of the regressors) (9): Czech Republic (CZE), Estonia (EST), Hungary (HUN), Latvia (LVA), Lithuania (LTU), Poland (POL), Romania (ROM), Slovak Republic (SVK), Slovenia (SVN).

EU candidate and potential candidate countries (5): Albania (ALB), Croatia (HRV), Macedonia, FYR (MKD), Montenegro (MNE), Turkey (TUR).

EU neighborhood countries (3): Armenia (ARM), Moldova (MDA), Ukraine (UKR).